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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,541	10/29/2002	Yoshikazu Kurita	SIMTEK6496	7669

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EXAMINER	
SCHEUERMANN, DAVID W	

ART UNIT	PAPER NUMBER
2834	

DATE MAILED: 12/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/065,541	KURITA ET AL.	
	Examiner	Art Unit	
	David W. Scheuermann	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 September 2004* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) *5,7,8,10,13-22 and 24* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6,9,11,23 and 25* is/are rejected.

7)☒ Claim(s) *12 and 26* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 October 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Appeal Brief

Applicant's remarks regarding claims 3 and 4 are persuasive and accordingly the finality of the previous office action has been withdrawn.

Prosecution Reopened and Response to Arguments

Prosecution has been reopened in order to present new grounds of rejections. The structure of the Nishikawa et al. motor which performers the reduced vibration (i.e., spaced magnets axially and circumferentially) when the motor is accelerated also performs the same function when the starter motor is de-accelerated. Thus even though not expressly stated in the reference, it is inherent that the cogging torque reduction structure reduces cogging torque and vibration not only as the motor accelerates, but also when it decelerates.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 23 and 25 are rejected under 35 U.S.C. 102(a) as being anticipated by Nishikawa et al. Nishikawa et al., in figure 9, show:

A rotating electrical machine of reduced cogging torque at the time after said machine is powered comprised of cooperating, relatively rotatable permanent magnet and coil winding elements said permanent magnet element being comprised of circumferentially spaced permanent magnets of opposite polarity (see fig. 1), said coil winding element being comprised of circumferentially spaced magnetic pole cores around which electrical coils are wound, said cores having ends in facing relation to said permanent magnets, the relationship between said pole cores facing ends and said permanent magnets being skewed to reduce the cogging torque (note figure 9; and column 1, lines 47-50) of the starter motor at the time after said machine has been powered and power is no longer being applied (inherent), each of said permanent magnets being comprised of axially spaced and circumferentially spaced but circumferentially overlapping segments to effect the skewing (this feature is shown in figure 9). Furthermore, note the last sentence in the abstract describes the decreased cogging torque which would inherently include both acceleration and deceleration states of operating.

Re claim 25, note that there are two side magnet segments shown in figure 9.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1- 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiga et al., US 5475176 in view of Nakano, US 5942873. Shiga et al. disclose: An electrically operated starter for an internal combustion engine, said starter comprising a DC electrical motor having an output shaft in starting arrangement with a shaft of the engine for starting the engine upon the application of electrical power (inherent); said motor being comprised of cooperating, relatively rotatable permanent magnets and selectively energized coil winding elements (inherent) said permanent magnet element being comprised of circumferentially spaced permanent magnets of opposite polarity, said coil winding element being comprised of circumferentially spaced magnetic pole cores around which electrical coils are wound, said cores having ends in facing relation to said permanent magnets(note armature 113 facing magnets 112), [said motor having reduced vibration after the discontinuation of application of electrical power to said coil winding elements upon engine starting by at least one or reducing the cogging torque of the starter motor] (the preceding bracketed limitations are not expressly recited) and rigidifying (note column 2, lines 6-9) the outer housing of the starter motor. Shiga et al. do not expressly disclose said motor being comprised of

cooperating, relatively rotatable permanent magnets and selectively energized coil winding elements [wherein] said permanent magnet element being comprised of circumferentially spaced permanent magnets of opposite polarity. Nakano discloses skewing circumferentially spaced permanent magnets and selectively energized coil winding elements [wherein] said permanent magnet element being comprised of circumferentially spaced permanent magnets of opposite polarity, as shown in figure 2 and 3, for the purpose of decreasing cogging torque (note column 1, lines 53-62). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use the skewed circumferentially spaced permanent magnets and selectively energized coil winding elements [wherein] said permanent magnet element being comprised of circumferentially spaced permanent magnets of opposite polarity in the motor of Shiga et al. One of ordinary skill in the art would have been motivated to do this to reduce the cogging torque of the motor. Furthermore, as set forth above, cogging torque is reduced whenever the motor is turning, thus the cogging torque and associated vibration is reduced after "discontinuation of application of electric power". Claims 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Shiga et al. in view of Nakano and further in view of Nishikawa et al. The combination of Shiga et al. and Nakano disclose the invention as claimed except for the limitation of the permanent magnets being comprised of "axially spaced and circumferentially spaced but circumferentially overlapping segments". Nishikawa et al. in figure 9 clearly teach arranging permanent magnets axially spaced and circumferentially spaced but circumferentially overlapping segments for the purpose of

reducing cogging torque. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to include a center segment and two side segments axially spaced and circumferentially spaced but circumferentially overlapping segments in the motor of the combination of Shiga et al. and Nakano by any of reducing manufacturing costs by using a plurality of smaller magnets and further reducing cogging torque by skewing the pole interfaces axially along the axis of rotation.

Allowable Subject Matter

Claims 12 and 26 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action. Nishikawa et al. teaches only one side segment on each side of the center segment. The addition of the limitation of "...more than one side segment on each side of the center segment and the side segments on each side are circumferentially spaced from each other," is neither found nor fairly suggested in the prior art or any combination thereof.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David W. Scheuermann whose telephone number is (571) 272-2035. The examiner can normally be reached on Monday through Friday from 8:00 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached at (571) 272-2044. The fax phone numbers for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1562.

dws
November 27, 2004

DARREN SCHUBERG
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800